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| EXAMINER |
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GOFF II, JOHN L

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| ART UNIT | PAPER NUMBER |
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1733

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/800,009

Applicant(s)

FITZGERALD, FERGUS RUPERT

Examiner

John L. Goff

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 34-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 34-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/872,906.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/15/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 45-55 been renumbered 46-56, note there were two claims numbered 45.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 34-36, 38-40, 44-46, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. (EP 816254 with U.S. Patent 5,904,265 used as the translation) in view of Dunne (GB 2289436).

Zandbergen et al. are directed to lining a storage tank. Zandbergen et al. teach a method for lining the storage tank comprising sand-blasting (i.e. keying) the inner surface of the tank and applying a preformed, flexible double-walled lining (i.e. an interstitial grid) to the inner surface (Figure 1 and Column 2, lines 36-37 and 40-43). Zandbergen et al. teach the lining may be

Art Unit: 1733

reinforced on both sides with a glass-fiber-reinforced plastic material (i.e. a corrosion barrier coating on one side and a pliable glass reinforced plastics sheet on the other side) and the inner glass-fiber-reinforced plastic material is used to adhesively attach the liner to the inner surface of the tank (Figure 1 and Column 2, lines 6-9 and Column 3, lines 35-37). Zandbergen et al. teach the outer glass-fiber-reinforced plastic sheet may have a sealing layer applied to it (Column 3, lines 38-41). Zandbergen et al. teach the lining comprises upper and lower fabrics (i.e. facings) with a mesh reinforcing grid therebetween (Column 2, lines 48-53). Zandbergen et al. teach the lining may be formed of a plastic (e.g. aramid fiber) material (Column 3, lines 28-31). Zandbergen et al. teach impregnating the double-walled lining with adhesive such as ultraviolet curing adhesive to bond the fabrics and the reinforcing grid and laminate the glass-fiber-reinforced plastic materials directly to the lining (Column 3, lines 60-64). Zandbergen et al. are silent as to the specific composition of the outer glass-fiber-reinforced sheet. Zandbergen et al. are also silent as to its form prior to applying it to the lining. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the outer glass-fiber-reinforced sheet taught by Zandbergen et al. a preformed ultraviolet curable sheet of the well known type shown for example by Dunne to provide the outer glass-fiber-reinforced sheet in an easy application form.

Dunne is directed to a flexible, uv curable glass-fiber-reinforced sheet. Dunne teaches the sheet comprises a resin matrix, glass-fiber reinforcement fillers, and a radiation sensitive curing catalyst, i.e. photoinitiator. Dunne teaches the sheet has upper and lower nylon protective backings and at least an upper uv protector. Dunne teaches the sheet is applied to the surface of the substrate by removing the lower protective backings, applying the sheet to the surface of the

Art Unit: 1733

substrate, removing the upper protective backings, and uv-curing the sheet to create a substantially water impermeable lining. Dunne teaches the uv curable glass-fiber-reinforced sheet can be used as a tank lining (Figure 1 and Page 1, lines 16 and 18-20 and Page 4, lines 5-19 and Page 7, lines 15-18 and GB 2243111).

Regarding claims 44 and 45, while Zandbergen et al. do not specifically recite lining the tank surrounding the manway last, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have lined this section of the tank last so as to avoid damaging the parts of the tank previously lined.

Regarding claim 46, it is noted Zandbergen et al. teach joining sections of the lining along a seam wherein the ducts of the lining can communicate with each other, i.e. the sections would be butt joined to one another along the seam not overlapping one another (Column 3, lines 45-55).

4. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Tonge (GB 2111429).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claim 37 except for a specific teaching of using polyester facings, it being noted Zandbergen et al. teach the lining comprises upper and lower fabrics (facings) formed of a plastic material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the upper and lower fabrics taught by Zandbergen et al. as modified by Dunne polyester facings as this was a well known chemically resistant tank lining facing material as shown for example by Tonge.

Tonge is exemplary in the art of lining a storage tank with a chemically resistant tank lining comprising a reinforcement, e.g. a glass-fiber-reinforced sheet, and a facing, the facing comprising a polyester mat and resin (Page 1, lines 11-15, 44-49, and 61-64 and Page 2, lines 1-14).

5. Claims 40-42 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Bachmann (U.S. Patent 5,269,436).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claims 40-42 and 56 except for a teaching on including in the lining as the mesh reinforcement grid a metal mesh as opposed to or in addition to a plastic mesh. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the lining taught by Zandbergen et al. as modified by Dunne a metal mesh and/or plastic mesh as the mesh reinforcement grid as it was well known in the art as shown for example by Bachmann to use a metal mesh within the lining to increase the strength of the tank wall or use a plastic mesh within the lining to add flexibility to the wall.

Bachmann is exemplary in the art of a lined double-walled tank wherein the lining is formed from a metal (such as aluminum) or plastic mesh material wherein the metal mesh adds strength while the plastic mesh adds flexibility to the wall (Column 1, lines 36-40 and 51-53 and Column 2, lines 7-12 and 22-24). Bachmann is also exemplary of the use of storage tanks as underground storage tanks (Column 7, line 1).

Regarding claim 56, Zandbergen et al. do not specifically disclose using the liquid storage tank as an underground storage tank. It would have been obvious to one of ordinary skill

Art Unit: 1733

in the art at the time the invention was made to use the storage tank taught by Zandbergen et al. as modified by Dunn in a well known and conventional manner such as an underground storage tank as shown for example by Bachmann wherein only the expected results would be achieved.

6. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of MacDonald (U.S. Patent 3,723,234).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claim 43 except for a specific teaching of using polyethylene in the lining, it being noted Zandbergen et al. teach the lining comprises upper and lower fabrics (facings) and a reinforcing grid formed of a plastic material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use in the lining taught by Zandbergen et al. as modified by Dunne any well known lining material such as polyethylene (including high density polyethylene) as was well known as shown for example by MacDonald to provide a lining having adequate corrosion resistance.

MacDonald is exemplary in the art of lining a storage tank with a corrosion resistant tank lining comprising materials such as polyethylene including high density polyethylene (Column 1, lines 24-32 and Column 2, lines 11-21 and 32-42 and Column 3, lines 49-62).

7. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Stokes (U.S. Patent 3,475,260) and optionally Cornell (U.S. Patent 3,669,787).

Art Unit: 1733

Zandbergen et al. and Dunne as applied above teach all of the limitations in claim 47 except for a specific teaching of sealing the seams with tape. It would have been obvious to one of ordinary skill in the art at the time the invention was made to seal the seams taught by Zandbergen et al. as modified by Dunne with tape as was well known in the art as shown for example by Stokes to form leakproof seams, it being noted glass reinforced plastic tapes appear to be suggested by Stokes but in any event it would have been obvious to use any well known tape in the art including glass reinforced plastics tapes such as those optionally shown for example by Cornell as only the expected results would be achieved.

Stokes is exemplary of lining a storage tank wherein the seams formed during lining are leakproof sealed with glass reinforced plastic tape (Column 1, lines 21-25 and Column 2, lines 33-47 and Column 4, lines 5-9). Cornell is exemplary of a glass reinforced plastic tape for use in tank lining (Column 2, lines 37-60 and Column 6, lines 1-6).

8. Claims 50, 51, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Chadbourne et al. (U.S. Patent 4,552,166).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claims 50, 51, and 54 except for a teaching on cleaning, inspecting, and repairing the tank prior to applying the lining. It would have been obvious to one of ordinary skill in the art at the time the invention was made to clean, inspect, and repair the tank in Zandbergen et al. as modified by Dunne prior to retrofitting the tank as was well known and shown for example by Chadbourne et al. wherein only the expected results would be achieved.

Chadbourne et al. are directed to retrofitting a vessel with a secondary containment (lining). Chadbourne et al. teach cleaning, inspecting, and repairing the tank prior to retrofitting (Column 1, lines 57-61).

9. Claims 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Watkinson (U.S. Patent 5,752,616) and/or Yamabe et al. (U.S. Patent 4,436,772).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claims 52 and 53 except for a teaching of the inner glass-fiber-reinforced material, i.e. the glass fiber and resin coating adjacent the inner wall of the tank, comprising a glassflake epoxy resin. It would have been obvious to one of ordinary skill in the art at the time the invention was made to sue as the inner glass-fiber-reinforced material taught by Zandbergen et al. as modified by Dunne a glassflake epoxy as was well known in the art as shown for example by Watkinson and/or Yamabe et al. wherein only the expected results would be achieved.

Watkinson is directed to a method of applying a laminate to a storage vessel. Watkinson teaches providing the inside of the vessel wall with a glass-fiber-reinforcement layer (corrosion barrier layer) wherein the layer comprises a glassflake epoxy resin and the layer has a thickness greater than 1000 microns (Column 5, lines 66-67 and Column 6, lines 1-8). Yamabe et al. are directed to an anticorrosive coating for bridges or tanks wherein the coating comprises a glass-fiber-reinforcement made of glass flakes in epoxy resin (Column 8, lines 22-27).

Art Unit: 1733

10. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zandbergen et al. and Dunne as applied to claims 1, 34-36, 38-40, 44-46, 48, and 49 above, and further in view of Dykmans (U.S. Patent 5,675,941).

Zandbergen et al. and Dunne as applied above teach all of the limitations in claim 55 except for a teaching on using uv lamps to cure the uv curing resin. It would have been obvious to one of ordinary skill in the art at the time the invention was made to cure the uv curing resin taught by Zandbergen et al. as modified by Dunne using any well known means such as uv lamps as shown for example by Dykmans as only the expected results would be achieved.

Dykmans is exemplary in the art of using uv lamps to cure a uv curing resin present in a liner of a storage tank (Column 5, lines 52-67 and Column 6, lines 1-5).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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